

## PATENT ABSTRACTS OF JAPAN

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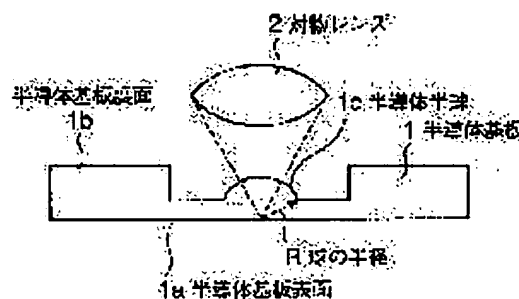
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(54) SEMICONDUCTOR DEVICE, METHOD OF EVALUATING AND ANALYZING SEMICONDUCTOR DEVICE, AND WORKING DEVICE FOR SEMICONDUCTOR DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To stably enhance resolution in reverse face analysis, and to allow sure and easy analysis and evaluation for a semiconductor device of which the fineness progresses.

SOLUTION: A desired portion in a reverse face 1b of a semiconductor substrate is worked to form a semiconductor hemisphere 1c in the semiconductor device wherein an integrated circuit is formed in a obverse 1a of the semiconductor substrate. Reverse face analysis of high resolution is conducted using the semiconductor hemisphere 1c as a solid immersion lens.



## LEGAL STATUS

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(1) **Japanese Patent Application Laid-Open No. 2002-189000**

**“Semiconductor Device, Evaluation and Analysis Method of a Semiconductor Device, and Processing Unit of a Semiconductor Device”**

5           The following is English translation of an extract from the above-identified document relevant to the present application.

          While a grinding tool 3 having a groove 3a configured into a semicircular shape in cross section is pressed against a reverse surface of semiconductor substrate 1b and rotated  
10   with a normal that runs through the centre of a trench 3 as an axis, a semiconductor substrate is grinded by abrasive such as diamond slurry and diamond paste.

          As a result, a convex semiconductor hemisphere 1c is formed along a semicircular trench 3a, having a rotation axis in the centre (see Fig 3 (a)).

          Depending on whether a semiconductor hemisphere 1c is a semispherical solid immersion  
15   lens as shown in Fig 1 or a super semispherical solid immersion lens as shown in Fig. 2, the size and shape of a trench 3a of grinding tool 3 is selected and the depth for grinding is adjusted.